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PAPERS

IN

MECHANICS.

No. I.

DOUBLE BEVELLED PLANE.

The sum of TEN GUINEAS *was this session given to Mr. C. W.* WILLIAMSON, *New-street, Elizabeth-place, Kennington-cross, for his double bevelled Plane, for smoothing hard or coarse grained woods. The following communication has been received from the candidate on the subject, and a specimen of the Plane has been placed in the Society's repository.*

11, New-street, Elizabeth-place,
Kennington-cross.

SIR,

FEELING sensible that the Society of Arts has ever been liberal in investigating and rewarding those inventions that promote improvement in the arts, which are communicated to the public through its medium, I beg leave to offer my humble effort to its consideration.

It consists of an improved smoothing plane, for the use of cabinet makers, and others who require planes to cut either hard or coarse grained woods, and differs materially from those in common use.

My improvements consist in making the plane-iron of the finest cast-steel, and also in making it with two bevels: that is, bevelling it on both sides, by which means one iron becomes superior in its operation to the double iron that is adopted in the best planes.

To obtain this effect, I have made it sufficiently strong to resist the wedge, and to prevent its breaking by any inequality that might be in the wood or steel. The edge, by means of the two bevels, becomes much stronger, will continue its keenness much longer, and will cut much smoother than any plane with which I am acquainted.

It appears to me that planes had originally but one iron, bevelled on one side; such are yet in use, but are very imperfect tools; that they were materially improved by the addition of a top iron, which, acting as an upper bevel, is the cause of the double-iron plane cutting better than the single-iron plane; but, even then, the working iron, if I might so term the lower iron, has but one bevel, which causes it to be far from a perfect tool to cut hard or coarse wood.

It appears to have been a desideratum for some years to employ cast-steel for plane-irons, on account of the fine and durable edge that it admits, superior to any other steel; for this purpose a plan was adopted of soldering cast-steel to cast-iron; but experience proved to the users of planes that, however good the plan might appear in theory, it did not answer in practice; for it was no uncommon occurrence in using such, for the steel to be forced from the iron to which it had been soldered; and when this did not occur, yet if the tempering was imperfect it could not be corrected in common practice by any ordinary workman, and I believe they are now nearly out of use. Another plan was to make plane-irons wholly of cast-steel, but these were only with one bevel, and the inequality of the surface, as well as the brittleness of the steel, caused these cast-steel irons to break in a short time, when used for common work, as they could not be made thicker than the welded one, on account of the top iron; thus this plan also failed.

The superiority of two bevels is generally acknowledged in the use of turning tools, of axes, &c. but the principle has never, as far as I know, been adopted in plane-irons prior to my application of it.

Thus it appears that the advantages gained by a cast-steel single-iron, made sufficiently thick to be bevelled on both sides, are a finer and more durable edge than can be obtained by any other steel; little risk of the iron breaking on account of its additional thickness; the plane not choaking; there being no top iron, and therefore no loss of time in fitting it; and its producing a smoother surface than any plane now in use.

I am Sir,
&c. &c. &c.
C. WILKS WILLIAMSON.

A. Aikin, Esq.
Secretary, &c. &c.

Mr. Williamson is in the employ of Messrs. Whiting and Branston; the latter of which gentlemen attended the committee, and stated that he has seen the candidate's plane in use for smoothing box wood to be engraved upon; that it cuts very smoothly and evenly, more so than other planes; and that the surface formed by it scarcely requires to be finished by the subsequent application of the scraper.

Reference to the Engraving.

Plate I. fig. 3, is a longitudinal vertical section of the plane; *a a* the body, *b* the wedge, *c* the plane-iron. Fig. 4 shows the bevelled part of the iron *c*, and the end of the wedge *b*, full sized.

No. II.

EXPANDING WEDGE.

The SILVER VULCAN MEDAL was this session presented to Mr. T. GRIFFITHS, of the Royal Institution, for his Expanding Wedge for the use of Sawyers. A model of which has been placed in the Society's repository.

THE wedge is represented in plate II. fig. 5, in which *a* is the handle or centre-piece, and *c c* are two lateral or spring pieces, all made of clean sound ash: they are inserted at one end into the brass or iron cap *b*, and are secured therein by two transverse bolts or pins of thick